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ABSTRACT

This paper reviews the literature concerning motor related child deaths, emphasizes that automobile related incidents are the major cause of death in children below 14 and over 1 year of age, and provides suggestions about what pediatricians can do to reduce highway fatalities among children. Special attention is given to investigations of the use of safety devices in motor vehicles. Research indicates that making the wearing of seat belts mandatory by statute somewhat alleviates fatality, although most drivers do not regularly use their seat belts. Problems of alternate restraining devices are discussed. Pediatricians can facilitate the protection of children by asking parents during well-baby care office visits about the type and level of use of child restraining devices they have and by prescribing an appropriate device when necessary. (Author/RH)

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MOTOR VEHICLE RELATED CHILD DEATHS: A PLEA FOR ACTION

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ABSTRACT: (J.R.T.): A review of the literature suggests the problem of motor vehicle fatalities in children is not only serious because of its high incidence, but also because of its complexity. General lack of awareness, public underutilization of presently available preventive measures, and insufficient legislative support are some of the major obstacles to consider. The role of the pediatrician as a child advocate and his responsibility as an educator call for a minimal degree of collective and systematic action towards the solution of the highway epidemic. Consistently providing relevant information during selected health maintenance visits, and prescribing indicated child restraint devices would not only greatly facilitate their purchase, but it would also transfer the pediatrician's responsibility to the parents' shoulders.

FIVE KEY INDEXING PHRASES: 1.) Accident Prevention
2.) Automotive Restraint Systems 3.) Traffic Safety
4.) Patient Education 5.) Other

Motor Vehicle Related Child Deaths: A Plea for Action

Among the many causes of automobile collisions and personal injury--including human error, mechanical malfunction, and environmental conditions, improper use or lack of use of seat belts, and restraining devices is considered a major factor in automobile fatalities. National statistics show 875 people die every week in automobile accidents, and 67,000 are injured.[1] About 3.9 million motor vehicle-related injuries were estimated from the National Health Survey in 1973[2]--almost one in every fifty United States residents. The proper use of seat belts by all drivers could save thousands of lives a year, and could reduce the severity of the millions of injuries resulting from automobile-related accidents each year.

Safety experts have emphasized use of a seat belt minimizes damage to the driver and occupants of a vehicle by preventing them from being thrown from a car, thus avoiding what is known as the "second collision" or "third" or "fourth" due to the initial impact sending the occupants through the windshield, crashing into the steering wheel, etc.[3] Seat belts, particularly along with shoulder harnesses, are safety devices of incomparable value in the event of a collision.[4-6]

While automobile related incidents are the major cause of accidental death and disabling injury in the general

population, they are the major cause of death in children below 14 years and over one year of age. Each year approximately 4.7 thousand deaths and 2.3 hundred thousand disabling automobile-related injuries occur among children of this age.[1] In Texas, automobile-related accidents account for approximately half of all deaths termed "accidental," with the majority involving young persons.[7]

Fourteen years ago, the United States Congress enacted legislation making installation of seat belts mandatory in new domestic and imported automobiles. Although nearly every passenger vehicle sold in the U.S. since 1964 has been equipped with seat belts, it is believed fewer than 20% of American drivers consistently use them in day-to-day driving.[8]

During the memorable "Buckle Up" media compaign of the mid-sixties, numerous surveys on seat belt usage were conducted, with drivers and vehicle occupants claiming consistent use of the devices 60-80% of the time in their daily driving. However, in a landmark study of observed seat belt usage in moving vehicles[8], a research team from the University of North Carolina Highway Safety Research Center found less than one of three drivers whose cars were equipped with seat belts were actually using them while on the road. The reported consistency of use evidenced in self-report studies of the day did not coincide with results of further observational

studies. In one belt questionnaire study,[9] most people who were asked why they did not wear a seat belt replied they had simply forgotten to put it on.

Despite increased media coverage in the late 1960's promoting seat belt usage, and talk of legislative action making seat belt use mandatory, most drivers continued to neglect their seat belts. By 1970, many safety experts and government officials suggested revising media campaigns dealing with auto safety practices.[10]

Increased seat belt usage was cited as a significant factor in reduction of motor vehicle fatalities between 1972 and 1974, and the belt interlocks, buzzers, and warning systems in cars manufactured during this time were believed to have influenced a significant increase in belt usage in new models.[10] However, many drivers chose to ignore (or disconnect) such safety warning systems, complaining lights and buzzers were "annoying." A study in the spring and summer of 1972 found no statistically significant difference in observed belt use between 1972 model cars with, and in those without, buzzer-light systems.[11] However, in 1974, when the installation of buzzer-interlock systems in new cars was required by law, the estimated reduction in deaths nationwide resulting from this was approximately 1% for the first four months and 2% for the second four-month period.[12]

According to some surveys, drivers of smaller economy-model cars are more likely to buckle themselves up, and drivers of larger, luxury American automobiles are believed to be less likely to use seat belts or shoulder harnesses.

Several foreign countries have enacted seat belt laws and have witnessed reductions in rates of accident-related deaths and injuries. To date, France, Denmark, West Germany, Switzerland, Norway, and Finland have made buckling of seat belts while driving required by law and violations punishable by fine or jail. England is also considering enacting such a law. In 1972, compulsory use of seat belts began in Australia and the total of automobile-related deaths has been lowered by 17% as a result.[13] It should be noted immediate effectiveness and long term gains of such legislation is in direct ratio with the degree of actual compliance and the extent of enforcement.

Researchers have claimed various individual and demographic factors, as well as situational variables, influence use of seat belts. Consider the following research findings, referring to demographic, individual, and environmental factors.

In the North Carolina observational study[8] of on-road belt usage, Council and his associates found several relevant variables related to seat belt usage.

1. Older drivers tended to shun use of seat belts.

2. Men more consistently used seat belts.

3. Caucasians tended to buckle up more consistently than non-whites.

4. Availability of restraining devices was a factor (pre-1964 vehicles are not required by law to have such devices installed).

5. "Long trip" drivers tended to wear seat belts more so than "short trip" motorists.

In a social-psychological study of drivers' use of seat belts in relation to attitude and level of anxiety,[14] several relationships which may influence a commitment to use available devices were noted:

1. Drivers reported use and actual use of seat belts was predictable from their opinions about the comfort and effectiveness of belts.

2. As reported by drivers, and as independently observed, a strong relationship was found between certain other attitudes towards seat belts and their use.

3. Low-anxiety drivers exhibited a stronger association between their attitude towards seat belts and their use than did high-anxiety drivers.

In an investigation of seat belt use during the night,[15] a roadside survey was conducted between 7:00 p.m. and 3:00 a.m., during which seat belt use was observed and drivers were interviewed. Only 14% of the sample drivers were observed to be wearing seat belts. The authors also concluded seat belt use at night by drivers involved in crashes was 10% lower than average night drivers.

Discussion

The literature clearly states traffic accidents are a problem regarding death and disabling injuries; this problem is especially acute in children, for whom traffic-related incidents are the major cause of death. Simply making restraining devices available to vehicle users by no means guarantees use. Most drivers do not regularly use their seat belts. Furthermore, research strongly suggests we cannot trust individuals' self-report about seat belt usage; most people who report using seat belts regularly, in fact, do not. Research evidence indicates that making the wearing of seat belts mandatory by statute alleviates fatality somewhat.

Most physicians are aware of the problem of patient non-compliance. Regardless of accuracy of diagnosis and appropriateness of prescription, patients not following them receive little other than palliative support. The same problem exists regarding seat belt use.

Various regulatory agencies are now planning to require vehicles to be installed with "passive restraining apparati." For example, two prototypes presently developed for passive restraining devices are air bags and the Volkswagen system. While air bags have problems with utility of protecting adult passengers, they may not work for children. The effect of air bags' rapid inflation has been described as similar to

being "hit in the face by Muhammad Ali." Such a blow, surely stunning and uncomfortable to an adult, may certainly be adverse to a small child.

The Volkswagen system has an apparatus attached to the door which automatically, upon closing the doors, provides restraint equivalent to a seat belt. However, the problem here regarding pediatric practice is that none of the presently marketed infant carriers, children's seats, or children's restraining harnesses can be adapted to a car with this system. There is no safe way for a child to occupy the seat in which this system is operative.

While it seems the concept of passive restraint has utility, one wonders about application of these two techniques--or, in fact, any technique which provides any inconvenience at all--to the American driving public. The interlock system, which prevents automobiles' engines from starting if the seat belts are not fastened, and the continuous warning buzzer systems (warning buzzers presently go off after approximatly 10 seconds) were rejected by the American public. They insisted that their congressional delegates pass laws specifically preventing these devices from being required. As soon as any number of people have to pay $150 to have their air bags serviced, air bags, as a passive restraint technology, could be specifically excluded from those items of mandatory equipment.

The Pediatrician's Responsibilities

We now reach the question of what can be done? The problem seems not so much to be one of equipment or technology, since both of these exist. It is rather one of vehicle user compliance. While compliance is a common problem in medical practice, an area which may offer some hope is the primipara mother. In our present social situation, women having their first child tend not to live at home with the child's grandparents. For this reason much information and advice about child rearing practices does come from the pediatrician.

Asking parents to become familiar with different devices, choosing one which meets all requirements, shopping for the selected devices, and then using it regularly may prove to be a task not every parent is willing or able to accomplish. Just as the pediatricians do not give their patients a list of cough syrups and then ask them to select and buy one fitting their needs, giving them a pamphlet with information about restraints may not be as effective as a prescription specifying the appropriate type of device and where to find one. Prescribing this purchase is relaying a non-verbal message which is consistent with our verbal statement: "This is an important child care matter." It also fulfills the responsibility of the physician, to inform and facilitate the process of protecting children, which we are not doing now in the area of motor vehicle accidents.

The initial step in treatment should begin with the pediatrician's attendance at time of birth. Here, along with prescribing feeding methods, schedules, and other items of neonatal care, the pediatrician should inquire which type of infant carrier the mother has decided to use. If the mother has not thought at all about any such carrier, the pediatrician may prescribe a model which he/she judges fit to meet the infant's needs. Almost as important as this initial contact would be follow-up contacts during well-baby care office visits.

We suggest for pediatricians to incorporate in well-baby care questions aimed at eliciting the type and level of use of child restraining devices, and to prescribe the appropriate device when necessary. There is, of course, no way in insure the parent will follow the prescription. The pediatrician will have, however, discharged his/her duty of the patient.

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